PRESS RELEASE

Haereticus Environmental Laboratory

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Formal Header: **Can Oxybenzone Cause Hirschsprung's Disease?**

Running Header: **Oxybenzone from Sunscreens threatens birth defect.**

Embargoed until March 27, 2019 (10:00 am Eastern Daylight Time)
Clifford, Virginia, U.S.A.

Hirschsprung's Disease is a birth defect that develops in the first trimester of pregnancy. The defect arises because nerve-cell networks do not form in the lower large colon and rectum of the fetus, ultimately causing difficulty or preventing the newborn from passing stool (*see infographic*). Without surgical intervention, obstruction of the bowel may occur, which can give rise to an infancy mortality rate as high as 80%.

Oxybenzone is a petroleum-based sunscreen chemical found in many sunscreen products, as well as in lip balms, shampoos and conditioners, body fragrances, mascaras, hand and dish soaps, and insect repellents, but also single-use plastic packaging and toddler pacifiers and teethers.

Recently, oxybenzone and octinoxate in sunscreen products have been banned in Hawaii and Key West, as well as by countries such as Palau, Bonaire, and Aruba. These chemicals were banned because they posed a threat to the survival of coral reefs and other marine wildlife, but also because of the awareness that these chemicals could have adverse impacts on public health[1].

In February 2019, the U.S. Food and Drug Administration delisted oxybenzone and 13 other petroleum-based UV sunscreen chemicals from being Generally Recognized as SAFE and Effective (GRASE), meaning that the assumption of oxybenzone's safety to the public health is highly questionable, and new and more sophisticated toxicological data need to be provided to verify its safety.

Part of this safety-concern rests with the pre-clinical toxicological data generated by the U.S. Health & Human Services' National Toxicology Program, showing that some of these chemicals, especially oxybenzone, can cause endocrine disruption to an animal's reproductive physiology, such as reduced sperm density, reduced prostate size in juveniles, changes in the estrous cycle, and reduction in immunity[2,3]. In one clinical study, boys who were exposed to oxybenzone exhibited lower testosterone levels[4], while girls manifested symptoms such as decreased birth weight and delayed breast development. Oxybenzone exposure has been linked to increases in endometriosis[5], alterations of lactation expression[6], as well as some birth abnormalities. A scientific study published earlier this month warns against the use of oxybenzone products on children[7].

A study published today in the journal, Reproductive Toxicology, strongly warns against the use of oxybenzone sunscreens and products by pregnant women in their first trimester. This is

because oxybenzone may increase the risk for having the birth defect, Hirschsprung's Disease (*see infographic*). The authors of this study also strongly caution women who are trying to conceive against the use of oxybenzone products, in part because oxybenzone is a fat-soluble chemical that can stay in the body for weeks after the exposure. Joe Dinardo, one of the authors of this study, explained that, "A pregnant woman who follows the instructions for the recommended-use of sunscreen products containing 6% oxybenzone (two 1-ounce application of sunscreen) could have concentrations of oxybenzone and fetal blood levels reach as high as 3,800 part per billion in the woman, and 384 parts per billion in the fetus. These concentrations of oxybenzone can potentially cause these toxic cellular changes, and give rise to Hirschsprung's Disease."

The study's recommendations for pregnant women to avoid oxybenzone exposure are also based on several recent scientific findings. One of these findings comes from a separate study that demonstrated a strong association between pregnant women whose urine was contaminated with high-levels of oxybenzone and their babies born with Hirschsprung's Disease. Another finding was that oxybenzone causes cellular manifestations of Hirschsprung's Disease by preventing neural crest cells from both migrating and differentiating into mature nerve clusters. This cellular pathology occurred at concentrations seen in both pregnant women and *in utero* (cord blood), and at concentrations calculated for any woman who uses 6% oxybenzone following an oxybenzone-sunscreen product instruction on a daily basis.

In response to this new study, Lara Adler, an environmental health educator (www.laradler.com), warns, "While everyone is exposed to environmental chemicals and are affected to some degree, pregnant women are the most vulnerable population. Fetal development is an incredibly sensitive process that can be altered with the introduction of endocrine disrupting chemicals like oxybenzone. Women, and especially pregnant women and mothers should avoid all products with oxybenzone, and should instead seek out natural, organic skincare that does not rely on chemicals like these. Additionally, health care practitioners now have a responsibility to educate their clients and patients on avoiding exposures to Endocrine Disrupting Chemicals like oxybenzone."

Dr. Denis Dudley M.D., an OB/GYN specializing in Fetal Maternal Medicine & Reproductive Endocrinology agrees with the study, stating, "Oxybenzone and other soluble petroleum-based sunscreen filters permeates human skin and will contaminate even the unborn, representing a major exposure to hormone disruptors for all of us. They are especially harmful to the most vulnerable among us - the unborn, young or adolescent children, and couples trying to conceive. They are linked to reproductive, metabolic, or neurological disorders, and several cancers."

Dr. Dudley's advice to patients for over a decade has been that, "Non-nanotized mineral oxide sunscreen filters, such as Zinc Oxide and Titanium Dioxide, never enters the blood, while providing superior broad-spectrum protection against sun damage. It also meets the sacred trust in medicine "first do no harm', particularly for the unborn. To this end, all petroleum-based sunscreen chemicals, and especially oxybenzone, are contraindicated in pregnancy - period."

Katie Kimball of Kitchen Stewardship explains that there are a number of consumer options for pregnant women to easily avoid oxybenzone exposure and still enjoy the sun, "It's always a win when science can help us moms keep our babies safe! The best part is when it's EASY to avoid - just a quick switch of a brand of lotion or shampoo. Some say there aren't good sunscreens without oxybenzone, but it's just not true. My family has tested over 100 products without

oxybenzone, which are effective and don't make you look like a ghost (www.kitchenstewardship.com/sunscreen)."

Caroline Duell of the Safe Sunscreen Council said there are a number of options for oxybenzone-free sunscreen products, "Brands dedicated to using only non-nanotized mineral active ingredients have been around all along, and their availability has grown tremendously in recent years. Major retailers and e-tailers across the US, Canada and the world are selling Safe Sunscreen Council member brands. Criteria for SSC companies are to avoid using ingredients scientifically shown to be harmful to human or aquatic systems, and Oxybenzone is prominently on the list."

If you have to be out in the sun between 10 am to 2 pm, Dr. Craig Downs, one of the authors of the study, recommends the use of sunwear, known as UPF-rated clothing, as the first line of protection against the sun, in combination with the judicial use of an oxybenzone-free sunscreen product where skin isn't covered by a hat or clothing. "UPF clothing is sunscreen that doesn't wash off, has fantastic broad-spectrum UV protection, and can make the same marketing claims as sunscreens. Three years ago, it was difficult to find UPF clothing, but today, most UPF-rated clothing is available through diverse clothing brands to reflect a variety of lifestyles and fashions, including brands such as Lilly Pulitzer, Under Armour, L.L. Bean, J. Crew and Chico's."

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An infographic is provided with this press release as a high-resolution PDF. Media outlets are free to use this infographic in an unaltered condition to accompany their reporting of the content of this press release.

A PDF of the scientific paper by "DiNardo and Downs (2019) Can oxybenzone cause Hirschsprung's Disease? Reproductive Toxicology" also accompanies this press release. It is copyright by Elsevier, and is provided to journalists as a reference/resource for this press release.

PRESS CONFERENCE: A modest press conference will be held on March 27, 2019 (Wednesday) at 10:00 am to 10:45 am Eastern Standard Time at the Hotel Tabard Inn at 1739 N St NW, Washington D.C. If you have need of specific electrical requirements, please contact info@haereticus-lab.org

Experts and Notable available for interview are:

- Joe DiNardo, chemicalsrtoxic@gmail.com email to schedule phone appointment
- Dr. Craig Downs, HEL – cadowns@haereticus-lab.org; email to schedule phone appointment
- Dr. Denis K.L. Dudley, MD, FRCS(c), Fetal Maternal Medicine/Reproductive Endocrinology OB/GYN physician. DKLD@Rogers.com; Phone: 613-292-8457
- Katie Kimball, CSME, Educator and Family Wellness Advocate at www.kitchenstewardship.com, Grand Rapids, MI, katie@kitchenstewardship.com; Phone: 616-947-4731
- Dr. Sharyn A. Laughlin, MD, FRCP, Asst. Professor, Faculty of Medicine, Division of Dermatology, University of Ottawa. slaughlin@rogers.com; Phone: 613-722-8551
- Lara Adler, Environmental Toxins Expert & Educator, www.laraadler.com contact@laradler.com
- Caroline Duell, Safe Sunscreen Council www.safesunscreencouncil.org info@safesunscreencouncil.org; Phone: 805-235-4521

[1] Downs CA, Kramarsky-Winter E, Segal R, Fauth J, et al (2016) Toxicopathological Effects of the Sunscreen UV Filter, Oxybenzone (Benzophenone-3), on Coral Planulae and Cultured Primary Cells and Its Environmental Contamination in Hawaii and the U.S. Virgin Islands. Arch. Environ. Contam. Toxicol. 70:265-288.

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[7] DiNardo JC & Downs CA (2019) Should we use products containing chemical UV absorbing sunscreen aditives on Children? Clinical Dermatology Research Journal. DOI: 10.4172/2576-1439.1000130